BIKO ASSOCIATES
INCORPORATED

Brian Ross

SUSTAINABLE DEVELOPMENT/ LAND USE/ ENERGY

Brian Ross leads Biko Associates' work in economic and sustainable development, energy policy, and 'smart growth' land use planning. Mr. Ross applies his knowledge and experience in comprehensive land use planning, economic development and market analysis, and energy policy and regulation.

EDUCATION

M. A. Urban & Regional Planning
University of Iowa

B.A. Anthropology
Grinnell College

EMPLOYMENT EXPERIENCE

1993 – present
Principal/Owner
Biko Associates, Inc.
Minneapolis, MN

1990 – 1993
Director of Policy and Programs
Citizens Utility Board
Chicago, IL

1989 – 1990
Director of Energy Programs
Urban Coalition Housing Group
New York, NY

1987 – 1989
Director of Energy Unit
City of New York Office of
Business Development
New York, NY

PROFFESSIONAL ASSOCIATIONS

American Planning
Association/Mn APA

Minnesota Renewable Energy
Association

PROJECT EXPERIENCE

- Mr. Ross directed the creation of a Land Use Plan for the North Shore of Lake Superior, between the cities of Duluth and Two Harbors. He used a stakeholder process that involved local government officials and residents from two counties, two townships and two cities. He is now directing implementation efforts for the Plan.
- Working with four communities, Mr. Ross adapted model sustainable development and Smart Growth ordinances to local conditions, facilitated stakeholder involvement, and presented sustainable development tools to local officials and citizens.
- Mr. Ross is part of the project team working with the City of Ashland, WI to develop a comprehensive plan. Ashland was recently awarded a Wisconsin Smart Growth grant to undertake this project.
- Mr. Ross investigated the economic viability of investment in renewable energy resources and energy efficiency in Northern States Power's Integrated Resources Plan for the Izaak Walton League of America, and assessed the robustness of NSP's economic modeling of wind energy investment. For IWLA and other clients he also assessed the resource planning for several other Minnesota and Illinois utilities.
- For the Citizens Utility Board in Illinois, and for the Minnesota Office of the Attorney General, Mr. Ross served as an expert witness in regulatory proceedings that included cost of service analysis and rate design, transmission and distribution system planning, gas utility rates, and gas supply planning.
- Mr. Ross created an analytical model showing the fiscal and economic relationships between transit services and participants in Wisconsin's welfare reform program (W2) for the Wisconsin Urban Transit Association (WUTA). Mr. Ross identified and described the dynamic between funding adequate transit services and meeting W2 goals for welfare reform.
- As judge for the 1000 Friends of Minnesota Smart Growth Design awards, Mr. Ross created evaluation criteria and reviewed projects submissions.
- Consulting to Hometown, Minnesota, Inc., a non-profit organization dedicated to reviving small city downtowns, Mr. Ross created a model downtown redevelopment plan based upon principles of sustainable development. Mr. Ross then directed the application of the model plan in three communities in Greater Minnesota.
- Working for Minnesota Planning, Mr. Ross managed the development of an integrated set of model ordinances, *From Policy to Reality: Model Ordinances for Sustainable Development*, for use by local governments.
- Mr. Ross facilitated the creation of a new Comprehensive Plan for Becker County, MN, including data analysis, GIS mapping, and public meeting facilitation. In the Itasca, Koochiching, Beltrami and Clearwater County comprehensive land use plans, he developed the economic development

COMMUNITY PLANNING AND DESIGN
LAND USE AND TRANSPORTATION
POLICY RESEARCH AND ANALYSIS

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studies and policies, and indicators for measuring progress toward land use goals for the.

- Created a 20-year planning estimate for ADA/STS transportation demand for Metro Mobility.

Company Person Responsible: Kirit S. Shah
Title: Supervising Engineer
Business Address: 1901 Chouteau Avenue
St. Louis, MO 63103
Phone: (314)554-3542

POL 1.15 When, and under what circumstances, did Ameren CIPS determine that the transmission facilities in question were needed to serve the Gibson City Plant? Please provide all written and electronic memos, correspondence and documentation discussing the need for and the decision to construct the transmission facilities.

Response: It was identified earlier in the planning process that the existing transmission system in the Gibson City area was inadequate to withstand a transmission contingency with Gibson City plant generation at its maximum capability.

Attached are the documents from our files which contain discussion regarding need for transmission reinforcement to maintain full generation at Gibson City. The new Gibson City South – Paxton East 138 kV line project was selected to provide this reinforcement instead of upgrading the existing two lines due to reliability and cost considerations.

For the interim period until the transmission upgrade is completed, an operating guide/special protection scheme was developed to reduce generation at the Gibson City Plant. This practice of using temporary operating guides/special protection schemes to reduce generation and alleviate transmission loading is consistent with how Ameren treats both affiliated and non-affiliated generation development.

K S Shain

copy to: C.E Stepanek

October 8, 1998

To: D. W. Capone
From: D. A. Whiteley
Re: Combustion Turbine Siting

For the past several weeks we have been supporting efforts to determine the best location to site up to 300 MW of new combustion turbine generation on the Ameren system. Most of the efforts have focused on Illinois locations. The most promising locations appear to be Kinmundy, the Pinkneyville area, and Gibson City based on the proximity to the NGP natural gas pipeline and CIPS transmission lines. From a transmission perspective, the Gibson City location is the best followed by Kinmundy. Adding generation at Gibson City has system benefits that the other sites do not offer, including the improved ability to serve CIPS' Northern Prairie Region customers, voltage support in the Northern Prairie and Heritage Regions, and loading relief on facilities that limit ATC. We have discussed all of the Illinois locations with Energy Supply Operations and they strongly favor the Gibson City location.

The results of transmission studies completed so far indicate that each of the three sites under consideration in Illinois will accommodate some, but not all, of the proposed 300 MW additional generation (3-100MW units) without some form of transmission enhancement.

The Kinmundy site could accommodate 200 MW of generation without transmission modifications. Transmission Design is estimating the cost of necessary upgrades to allow up to 300 MW at the Kinmundy site, but preliminary information suggests that the costs will be in the $2 million to $4 million range. They are also considering the lead-time necessary to complete the upgrades.

The Gibson City site can also accommodate 200 MW of generation without transmission modification assuming generation will be limited to 150 MW when one of the two transmission lines connected to Gibson City is out of service. A third transmission line into Gibson City (or extensive rebuilds) will be required to accommodate 300 MW at that location. The cost of bringing a third line into Gibson City will make it more economical to develop another site for the additional 100 MW of generation.

While we have only completed a cursory review of the Pinkneyville location, we believe it too can accommodate 200 MW of generation without transmission modification, and accommodate 300 MW with the addition of transformation at Cahokia and West Frankfort.

Energy Supply Operations believes that generation at Gibson City would provide much needed system support in the Northern Prairie and Heritage Regions. Past transmission studies and operating conditions have shown that for a single contingency during 1997

and 1998 summer peak conditions, some AmerenCIPS retail customers would be lost in this area due to inadequate voltage support. Ameren south-to-north transmission lines in the area have also been loaded above their emergency ratings during these summers.

Energy Supply Operations is collecting data to help quantify the system benefits of additional generation at Gibson City. In general however, generation at Gibson City would be useful in reducing power flows on heavily loaded transmission facilities that frequently limit ATC and limit the amount of transmission service (generally south to north) that can be accepted. They also believe that Gibson City generation would be used for redispatch in order to relieve constraints. Generation additions anywhere on the Ameren system will serve the purpose of supplying Ameren customers, and when not required for Ameren's customers, available for sale to others. Generation at the Gibson City location, however, would have the added advantage of reducing transmission constraints. Although it will not eliminate all transmission problems in the area, generation at the Gibson City site will improve the situation substantially.

Based on the significant transmission benefits of the Gibson City location, I recommend that we pursue acquiring property at both Kinmundy and Gibson City for combustion turbine generation additions. The timing of development of each site will depend on several factors including the timing of constructing a natural gas pipeline to Gibson City (about 7 miles) and delivery dates of the combustion turbine generators. For the initial three 100 MW units, locating two of the units at Gibson City and the remaining unit at Kinmundy would have the greatest transmission advantage. The Kinmundy site would then be available for an additional 100 MW unit without transmission addition, or 200 MW with transmission reinforcements.

cc: F. J. Pope
R. C. Harszy
P. J. Nauert
K. S. Shah
R. C. Smith
EE Date File

Copy to: KSS
CES
DBH

October 29, 1999

To: Dave Whiteley

From: Fred Pope

Re: **Gibson City Power Plant Capacity Upgrade**

As you know, the Interconnection and Parallel Operating Agreements for the Gibson City power plant are currently based on a maximum summer output of 206 MW's.

We have determined that "wet compression" can be installed on both of the Gibson City CTG's in time for initial commercial operation of the units, currently scheduled for June 1 and August 1, 2000. This feature is anticipated to increase the maximum summer output of each unit to 118 MW's or 236 MW's for the plant.

Please advise what transmission modifications are necessary together with the associated costs and schedule for accommodating this upgrade in plant output. Depending on the cost and schedule requirements for the transmission modifications, the plant owner may be willing to consider an alternative to upgrading the transmission system. Plant controls could be configured to automatically limit the plant output during a first contingency failure, such as an outage of one of the transmission lines.

Please let me know when we may discuss this issue further and begin development of the necessary change to the Interconnection and Parallel Operating Agreements.

CC: Don Capone
Rick Smith

Date: December 8, 1999

To: F. J. Pope

From: D. A. Whiteley

Subject: Transmission Reinforcements to Accommodate "Wet Compression" at Gibson City Plant

As requested in your memo of 10/29, we have investigated the transmission reinforcements required to accommodate a Gibson City Plant with "wet compression" added to produce a plant output of 236 MW for summer conditions. We have also determined the transmission reinforcements required for 270 MW of Gibson City Plant output for winter conditions. These reinforcements assume that the Gibson City Plant output would not be reduced for the outage of either the IP owned Gibson City-Brokaw 138 kV line or the AmerenCIPS owned Gibson City-East Paxton 138 kV line.

The total cost to accommodate a Gibson City Plant output of 236 MW for summer peak conditions is approximately $4.2 million, and the time to complete the required reinforcements is 18-24 months once the project is authorized. The cost to accommodate a Gibson City Plant output of 270 MW for winter peak conditions is approximately $6.9-9.7 million, and we estimate that it would take 24-36 months to complete the reinforcements. A breakdown of the cost estimates is included in the attached table.

To accommodate 236 MW of Gibson City Plant output during summer peak conditions, the IP owned Gibson City-Brokaw 138 kV line (29 miles) would need to be resagged and cleared for 125 degrees C operation at a cost of approximately $1.5 million. IP has indicated that this project would take approximately 10 months to complete once the work is authorized. The IP Gibson City-Brokaw 138 kV line would only have a summer emergency rating of 210 MVA, but it would not be overloaded if at least 26 MVA of Gibson City South substation load would be connected.

Based on 1999 summer data, the Gibson City South 138-69 kV Substation load was less than 26 MW 88% of the time in June, 62% of the time in July, 84% in August, and 88% in September. Thus there would be times when the IP Gibson City-Brokaw 138 kV line would be overloaded for the outage of the Gibson City-East Paxton 138 kV line when the Gibson City CTGs would be running. However, if the Gibson City CTGs would be called on only during peak temperature periods when the Ameren load is high, there is a good chance that the output from the Gibson City CTGs would not have to be reduced to avoid overloading the IP Gibson City-Brokaw 138 kV line.

In addition to the resagging the IP Gibson City-Brokaw 138 kV line, the AmerenCIPS Gibson City-East Paxton 138 kV line (16.8 miles) and Paxton 138 kV bus would need to be reconductored at a cost of approximately $2.7 million. This project would take approximately 12-18 months to design and construct once the work is authorized. The

new Gibson City-East Paxton 138 kV line conductor would be designed to handle the maximum Gibson City Plant output for both summer and winter conditions.

During winter conditions, the winter emergency rating for the IP owned Gibson City-Brokaw 138 kV line would be 238 MVA and would still be limiting for the outage of the Gibson City-East Paxton 138 kV line unless at least 32 MVA of Gibson City South substation load would be connected. Based on 1998-99 winter data, the Gibson City South 138-69 kV Substation load was less than 32 MW 100% of the time in December, 88% of the time in January, 95% of the time in February, and 100% of the time in March. Thus the required magnitude of load would not always be available when the Gibson City CTGs would be dispatched during the winter months. Therefore, reinforcements would be necessary and the estimated cost to reconductor the Gibson City-Brokaw 138 kV line would range from $4.2 to $7.0 million. We estimate that it would take approximately 24-30 months to design and rebuild the IP line once the work is authorized. This estimate is given as a range because we have not requested IP to develop a cost estimate to reconductor their line, and we have a good deal of uncertainty regarding the specific condition and capability of their facilities.

We hope that this information would allow a determination of whether to proceed with the above transmission reinforcements or to install plant controls to reduce the Gibson City Plant output following a specific transmission contingency. Let us know if there are any questions.

CES/

Attachment

cc: D. W. Capone
D. C. Bouse
K. S. Shah
R. C. Smith
D. B. Hennen
File: Gibson City CTGs
TP Chrono

Reinforcements Required to Accommodate **236 MW** of Gibson City Plant Generation
For Summer Conditions

Clear and Resag IP owned Gibson City-Brokaw 138 kV line	$1.5 million
Reconductor AmerenCIPS owned Gibson City-Paxton 138 kV line	$2.4 million
Reconductor AmerenCIPS owned Paxton-East Paxton 138 kV line	$0.2 million
Reconductor AmerenCIPS Paxton Substation 138 kV bus	$0.1 million
Total Cost of Reinforcements	$4.2 million
Estimated Time to Complete Reinforcements	18-24 months*

Reinforcements Required to Accommodate **270 MW** of Gibson City Plant Generation
For Winter Conditions

Reconductor IP owned Gibson City-Brokaw 138 kV line	$4.2-7.0 million
Reconductor AmerenCIPS owned Gibson City-Paxton 138 kV line	$2.4 million
Reconductor AmerenCIPS owned Paxton-East Paxton 138 kV line	$0.2 million
Reconductor AmerenCIPS Paxton Substation 138 kV bus	$0.1 million
Total Cost of Reinforcements	$6.9-9.7 million
Estimated Time to Complete Reinforcements	24-36 months*

* The lead times shown assume that the Gibson City-Brokaw 138 kV line and the Gibson City-East Paxton 138 kV line would not be out of service for construction at the same time. Engineering and/or procurement of material for both line reinforcements would be done coincidentally, and bypass circuits would not be required. Construction periods would include 3-month windows in the spring and fall only, and the lines would be out of service for an entire construction period.

cc: CES
SDD
ECP

December 27, 1999

To: D. A. Whiteley

From: F. J. Pope Fred

Re: Your Memo of 12/8/99 Regarding Transmission Reinforcements to Accommodate "Wet Compression" at Gibson City

Your memo of 12/8/99 indicated that a summer output of 236 MW at Gibson City will require approximately $4.2 million in upgrades for transmission facilities owned by AmerenCIPS and IP .

As you know, we anticipate having both units in service at Gibson City in summer, 2000 with wet compression. Your memo indicated that the transmission upgrades needed to accommodate the summer output of 236 MW would require roughly 18 to 24 months to implement. This means the plant will be in operation through two summer seasons before the transmission upgrades would be in place. Therefore, we are willing to rely on plant controls that would automatically curtail operation of wet compression, or provide for a comparable load run-back of 30 MW, if transmission loading becomes a problem.

Please advise who our contact should be for arranging the necessary control interface and demonstrating the load run-back provision.

We understand that this arrangement will be an interim solution until the permanent transmission upgrades outlined in your memo can be implemented.

We had been led to believe, based on your previous studies, that summer conditions prevailed in terms of transmission capabilities. However, it appears that the maximum 270 MW winter rating of the Gibson City units is creating the need for even greater work on the IP owned Gibson City-Brokaw line. This plant output represents the mechanical limit of the CT's and occurs at an ambient temperature of 4 degrees F. We probably need to have some more discussion about this issue before determining what the long term solution is.

R. C. Smith
K. S. Shah
D. C. Bouse
D. B. Hennen

Company Person Responsible: Kirit S. Shah
Title: Supervising Engineer
Business Address: 1901 Chouteau Avenue
St. Louis, MO 63103
Phone: (314)554-3542

POL 1.10 Please provide documentation that supports that this transmission upgrade is the least cost means of improving reliability to the area in question.

Response: Several alternatives were investigated to provide additional generation outlet transmission for the Gibson City Plant. The alternatives initially considered are as follows:

Alternative	Cost
Reconductor the existing 17 mile Gibson City South-Paxton 138 kV line and rebuild a 31 mile segment of the Gibson City South-Brokaw 138 kV line	$ 7,985,000
Build a new 45 mile Gibson City Plant-Forrest-Gilman 138 kV line	$17,258,000
Build a new 20 mile Gibson City South-Rantoul 138 kV line	$ 8,786,000

Attached is a cost estimate worksheet dated 5/24/00 that supports the above numbers.

The option to build a line from the Gibson City Plant to Forrest was proposed by Ameren's Distribution Planning group because of a perceived need to supply the growing load in the Forrest area. However, this project was not pursued as a solution to provide additional outlet transmission to the Gibson City Plant because of the large cost differential and because the need and timing for a transmission supply to the Forrest area is still uncertain.

Although the initial least costly alternative was to reconductor the two existing 138 kV outlet lines terminating at Gibson City South, the estimates showed that the cost to build a new line may be comparable. Also, for the reconductoring option, when the reliability of the supply to the customers in the Ford-Iroquois County area during construction was considered, it appeared that the reliability would be severely impacted with one of the two Gibson City South lines out of service for an extended period. Therefore, it was decided to further investigate options for a new line either to Rantoul or to a closer location to Gibson City South substation.

A second line to the Paxton area was considered, as it appeared to meet the above requirements. The line would be approximately 17 miles long, the Paxton East substation could be expanded to accommodate an additional line terminal, and an existing distribution right-of-way could be utilized to minimize the impact on area farmers. The estimated cost for the Gibson City South-Paxton East 138 kV line and terminal additions is $5,655,000. No other line terminating at Gibson City South Substation would be shorter or less expensive. Therefore, the Gibson City South-Paxton East 138 kV line is the least costly alternative to providing generation outlet transmission for the Gibson City Plant.

IPP Related Projects (Ameren)									
Gibson City				CES					
1a)Reconductor Gibson City –Paxton 138 kV line (16 miles) and	5/1/2002	Enhance Gibson City outlet transmission so generation does not have to be reduced or tripped	New		2,385 (60)			23	6/02
1b) Reconductor Gibson City – Brokaw (IP) 138 kV line (30 m)	5/1/2002	under contingency.			5,600				5/02
*** OR ***	--OR --								
2a) Gibson City –Forrest 138 kV line (24.4 mile),	5/1/2002		12/1/2004		8,099 (39)				6/04
2b) Forrest-Gilman 138 kV line (21 miles), and	5/1/2002				7,969 (38)				6/04
2c) Position at Gibson City and at Gilman	5/1/2002					1,190			6/04
*** OR ***	--OR --								
3a) Gibson City-Rising 138 kV line (20 miles) and	5/1/2002				7,636 (33)				6/04
3b) Position at Gibson City and at Rising	5/1/2002					1,150			6/04

AmerenCIPS' Response to
ICC Staff Data Request
ICC Docket No. 01-0620

Company Person Responsible: Kirit Shah
Title: Supervising Engineer
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Phone: (314) 554-3542

ENG 4.0 Please provide a list of all outages to the Gibson to Paxton and the Gibson to Brokaw 138 kV transmission lines for the past five years. For each outage state if it was scheduled or unscheduled, and the duration.

Response: This is a revised response as subsequent to the earlier response I found that our Transmission Service Analysis group is tracking the transmission line outage information.

The following records for unscheduled outages have been compiled from Relay Target Data records:

Unscheduled Outages

Facility	Outage Date	Duration of the Outage
Gibson City South-Paxton 138 kV	04/30/2000	Less than 1 min
	09/06/2001	Less than 1 min
Gibson City South-Brokaw 138 kV	04/30/1997	Less than 1 min
	04/30/2000	Less than 1 min
	05/18/2000	Less than 1 min
	07/28/2000	Less than 1 min
	08/23/2000	Less than 1 min

The following tabulation is prepared from information available for the time period January 1999 through December 2001.

Scheduled Outages

Facility	Outage Date	Duration of the Outage
Gibson City South-Paxton 138 kV	03/22/2000	8 hours
	06/01/2000	5 hours
	08/01/2000	6 hours
	05/22/2001	8 hours
Gibson City South-Brokaw 138 kV	01/22/1999	7 hours
	11/29/2000	5 hours

Our only other source from which this information may be derived is the daily log of system operator's records. However, to go through operator's daily records for the past five years would be extremely burdensome. Additionally, it should be noted that future

outage performance of these lines may not follow the pattern set by the past outage history.

Company Person Responsible: Kirit Shah
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ENG 14.0 Please provide the dates, duration, amount the generation output was reduced, and loading on each of the existing 138 kV lines out of Gibson City Substation for the period since the automatic generation reduction scheme was initiated.

Response: We do not have any record indicating that Gibson City generation output was reduced due to overloading of any one of the two outlet lines.